Draft California Water Plan Update 2013 Glossary

This glossary contains terms used in the text of California Water Plan Update 2013 *as well as additional terms related to water resources.*

A

abandoned wells — Wells that are abandoned but that have not been properly destroyed provide a vertical conduit for contamination of the aquifer. Although there is no accurate count of the number of such abandoned wells in California, one estimate is that there are more than 1 million such wells that are potential vertical conduits for contamination of the aquifer. State law (Health and Safety Code Section 115700) requires that such wells be destroyed. Some local jurisdictions require the old well to be destroyed before a permit is issued for construction of a new well. Context: resource management strategies.

acre-foot (af) — The volume of water that would cover 1 acre to a depth of 1 foot; equal to 43,560 cubic feet or 325,851 gallons.

adaptation (measures/strategies) — Adjustments to natural and human systems to moderate harm or to exploit beneficial opportunities in response to actual or expected effects of climate change.

adaptive capacity — The ability of systems, organizations, and individuals to (1) adjust to actual or potential adverse changes and events; (2) take advantage of existing and emerging opportunities that support essential functions or relationships; or (3) cope with adverse consequences, mitigate damages, and recover from system failures. Adaptive capacity is an indicator of how well a system will adjust to or recover from external changes or large perturbations (e.g., severe floods or droughts). *See also* "resilience."

adjudication — The act of judging or deciding by law. In the context of an adjudicated groundwater basin, landowners or other parties have turned to the courts to settle disputes over how much groundwater can be extracted by each party to the decision.

ag effective precipitation on irrigated lands — Annual precipitation used by crops planted in developed irrigated land areas. Context: water portfolio.

agricultural applied water use — The applied water use for irrigated agriculture, including water applied for groundwater recharge. Context: water portfolio.

agricultural discharge standards — State and federal water quality regulations regarding discharge of water used for agricultural production to streams, rivers, groundwater aquifers, or evaporation ponds. Context: scenario factor.

agricultural lands stewardship — Conserving natural resources and protecting the environment by compensating owners of private farms and ranches for implementing stewardship practices. Context: resource management strategies.

agricultural water use efficiency — The ratio of applied water to the amount of water required to sustain agricultural productivity. Efficiency is increased through the application of less water to achieve the same beneficial productivity or by achieving more productivity while applying the same amount of water. Context: scenario factor and resource management strategies.

agriculture water reliability (average) — A measure of a water system's ability to sustain the social, environmental, and economic agricultural systems that it serves during a year of average precipitation.

allocation of long-term contractual imports — Interregional allocation of water for periods of time more than one year through mechanisms such as the State Water Project and federal water projects. Context: scenario factor.

alluvial/alluvium — A general term for clay, silt, sand, gravel, or similar unconsolidated detrital material deposited during comparatively recent geologic time by a stream or other body of running water, as a sorted or semi-sorted sediment in the bed of the stream or on its floodplain or delta, as a cone or fan at the base of a mountain slope.

anadromous fish — Fish that live a majority of time in the ocean and breed in fresh water, such as salmon.

anthropogenic — Of human origin or resulting from human activity.

applied water — The total amount of water that is diverted from any source to meet the demands of water users without adjusting for water that is used up, returned to the developed supply, or irrecoverable. Applied water is the quantity of water delivered to the intake to a city water system, a factory, or a farm headgate, directly or by incidental flows to a marsh or wetland for wildlife areas. For existing instream use, applied water demand is the portion of the streamflow dedicated to instream use or reserved under the federal or State Wild and Scenic Rivers acts or the flow needed to meet salinity standards in the Sacramento-San Joaquin River Delta under State Water Resources Control Board standards.

applied water reduction — A decrease in the amount of water needed to meet the demand for beneficial use; applied water reduction can be a supply for both new (real) water and reused water. Context: resource management strategies. *See also* "new water."

applied water use — The total amount of water that is diverted from any source to meet the demands of water users without adjusting for water that is depleted, returned to the developed supply, or considered irrecoverable. Context: water balance.

appropriative right — The right to use water that is diverted or extracted by a nonriparian or nonoverlying party for nonriparian or nonoverlying beneficial uses. In California, surface water appropriative rights are subject to a statutory permitting process while groundwater appropriation is not. *See also* "riparian right" and "pueblo right."

aquifer — A body of rock or sediment that is sufficiently porous and permeable to store, transmit, and yield significant quantities of groundwater to wells and springs.

aquifer remediation — *See* "groundwater remediation/aquifer remediation."

aquitard — A confining bed or formation composed of rock or sediment that retards but does not prevent the flow of water to or from an adjacent aquifer. It does not readily yield water to wells or springs, but stores groundwater.

area of origin acts — State of California legislative acts providing special assurances to those counties and areas where the State's water resources originate, so as to allow for their own population and economic growth. *See also* "area of origin" as defined in California Water Code Sections 10500-10506 and 11460-11463.

artesian aquifer — A body of rock or sediment containing groundwater that is under greater than hydrostatic pressure (i.e., a confined aquifer). When an artesian aquifer is penetrated by a well, the water level will rise above the top of the aquifer. *See also* "confined aquifer," "semi-confined aquifer," and "unconfined aquifer."

artesian pressure — Hydrostatic pressure of artesian water, often expressed in terms of pounds per square inch; or the height, in feet above the land surface, of a column of water that would be supported by the pressure.

artificial recharge — The intentional addition of water to a groundwater reservoir by human activity, such as putting surface water into dug or constructed spreading basins or injecting water through wells. Also referred to as intentional recharge or managed recharge. *See also* "Category 1 recharge area."

available groundwater storage capacity — The volume of a groundwater basin that is unsaturated and capable of storing groundwater.

available soil water — The amount of water held in the soil that can be extracted by a crop; available soil water is often expressed in inches per foot of soil depth. It is the amount of water released between in situ field capacity and the permanent wilting point.

average annual option implementation cost — Annualized total monetary cost of option required for "turnkey" implementation, including environmental and third-party impact mitigation, storage, conveyance, energy, capitalized operations and maintenance, administrative costs, planning costs, legal costs, and engineering costs. Context: evaluation criteria and planning concept/consideration.

average annual runoff — The average value of total annual runoff volume calculated for a selected period of record, at a specified location, such as a dam or stream gauge. (*Cf.* "normal.")

average year water demand — Demand for water under average hydrologic conditions for a specific level of development.

B

background water conservation — The amount of conservation occurring independent of the best management practices and efficient water management practices (e.g., plumbing code changes, natural placement, and actions that water users implement on their own). Context: scenario factor.

basin — *See* "hydrologic basin."

basin irrigation — Irrigation by flooding areas of level land surrounded by dikes. "Basin irrigation" is used interchangeably with "level border irrigation" but usually refers to smaller areas.

basin management objectives (BMOs) — *See* "management objectives."

basin plan — A basin plan establishes a comprehensive program of actions designed to preserve, enhance, and restore water quality in all water bodies within California. The basin plan is each Regional Water Quality Control Board's master water quality control planning document. It designates beneficial uses of surface water and groundwater and water quality objectives that protect those uses.

beneficial use — (1) As part of the nine Regional Water Quality Control Boards' basin planning efforts, up to 25 water quality beneficial use categories for water have been identified for mostly human and instream uses. From Section 13050(f) of California's Porter-Cologne Water Quality Control Act: "'Beneficial uses' of the waters of the state that may be protected against water quality degradation include, but are not necessarily limited to, domestic, municipal, agricultural, and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves." (2) As stated in Section 1240 of the California Water Code: "The appropriation must be for some useful or beneficial purpose, and when the appropriator or his successor in interest ceases to use it for such a purpose [typically five years or greater] the right ceases." In this context, beneficial uses are defined in the California Code of Regulations. Categories of beneficial uses recognized in California include the following: Aquaculture, raising fish or other aquatic organisms not for release to other waters; Domestic, water used by homes, resorts, or campgrounds, including water for household animals, lawns, and shrubs; Fire Protection, water to extinguish fires; Fish and Wildlife, enhancement of fish and wildlife resources, including raising fish or other organisms for scientific study or release to other waters of the state; Frost Protection, sprinkling to protect crops from frost damage; Heat Control, sprinkling to protect crops from heat; Industrial Use, water needs of commerce, trade, or industry; Irrigation, agricultural water needs; Mining; Hydraulicking, drilling, and concentrator table use; Municipal, city and town water supplies; Power, generating hydroelectric and hydromechanical power; Recreation, boating, swimming, and fishing; Stock watering, commercial livestock water needs; and Water Quality Control, protecting and improving waters that are put to beneficial use. Context: (1) water quality, (2) water rights.

bioregion — A relatively large area of land or water that characterizes a geographically distinct assemblage of natural communities and species.

blending treatment — A process of reducing the concentration of a contaminant in one water source by blending or dilution with water that has a lower concentration. Context: resource management strategies.

blue water — Fresh surface water and groundwater (i.e., the water in freshwater lakes, rivers, and aquifers).[1] The California Water Plan quantifies components of blue water in the water portfolios. See, for example, water portfolio components for "Groundwater Net Change in Storage," Surface Water Total Available Storage," "applied water," "instream flows," "Wild and Scenic Rivers Net Water Use," and various "Return Flow" definitions.

blue water footprint — The volume of surface water and groundwater consumed as a result of the production of a good or service. Consumption refers to the volume of fresh water used and then evaporated or incorporated into a product. It also includes water abstracted from surface or groundwater in a catchment and returned to

[1] Definition taken in part from: Hoekstra AY, Chapagain AK, Aldaya MM and Mekonnen MM. 2011. *The water footprint assessment manual: Setting the global standard*. London, United Kingdom: Earthscan. Viewed online at: http://www.waterfootprint.org/?page=files/WaterFootprintAssessmentManual. Accessed: April 18, 2012.

another catchment or the sea. It is the amount of water abstracted from groundwater or surface water that does not return to the catchment from which it was withdrawn, unless the water is reused in a downstream process. In the latter case, the second use is a second blue water footprint for the same water.[2] The California Water Plan quantifies components of blue water footprint in the water portfolios as "net water use (demand)."

border irrigation — Irrigation by flooding strips of land, rectangular in shape and cross-leveled, bordered by dikes. Water is applied at a rate sufficient to move it down the strip in a uniform sheet. Border strips having no downfield slope are referred to as level border systems. Border systems constructed on terraced lands are commonly referred to as benched borders.

brackish water — Water with a salinity that exceeds normally acceptable standards for municipal, domestic, and irrigation uses but has less salinity than seawater. Context: resource management strategies.

brownfield site — The U.S. Environmental Protection Agency defines brownfield sites as follows: "With certain legal exclusions and additions, the term 'brownfield site' means real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant." Context: resource management strategies.

Bulletin No. 118 — DWR's Bulletin 118, last updated in 2003 and titled *California's Groundwater*.

C

California Central Valley Groundwater-Surface Water Simulation Model (C2VSIM) — A groundwater model covering the Central Valley that has three groundwater layers.

California Irrigation Management Information System (CIMIS) — CIMIS is a network of automated weather stations that are owned and operated cooperatively between DWR and local agencies. The stations are installed in most of the agricultural and urban areas in the state and provide farm and large landscape irrigation managers and researchers with "real time" weather data to estimate reference evapotranspiration (ETo) use to estimate crop and landscape evapotranspiration (ET) rates and make irrigation management decisions.

California Native American tribe — A federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the Native American Heritage Commission.

California Water Resources Simulation Model (CALSIM) — A DWR-developed surface water storage allocation model for the State Water Project. CALSIM II is the latest application of the generic CALSIM model to simulate State Water Project/Central Valley Project operations. The model is a product of joint development between DWR and the U.S. Bureau of Reclamation. See also Water Resource Integrated Modeling System.

capacity building — Capacity building is the process of equipping entities, usually public agencies, with certain skills or competencies or abilities for general upgrading of its performance capability by providing assistance, funding, resources, training, etc. For example, capacity building is one of three fundamental elements of conjunctive water use management, along with project construction and groundwater management. Context: resource management strategies.

catastrophic vulnerability — The probability and magnitude of potential negative economic, public health, and environmental impacts associated with water management actions. Context: scenario factor and evaluation criteria.

catchment — The area of land that catches and collects water above a reservoir or other storage structure.

Category 1 recharge area — An area that is an active recharge area at the present time under the control of water management agencies. The infiltration rate at such areas is high, and they are carefully managed to maintain that high infiltration rate and to protect the quality of the water that is being recharged. At most

[2] Definition taken in part from: Hoekstra AY, Chapagain AK, Aldaya MM and Mekonnen MM. 2011. *The water footprint assessment manual: Setting the global standard*. London, United Kingdom: Earthscan. Viewed online at: http://www.waterfootprint.org/?page=files/WaterFootprintAssessmentManual. Accessed: April 18, 2012.

sites, monitoring activities track groundwater levels, the rate of movement of the recharged water into the aquifer, and chemical changes. (*Cf.* "Category 2 recharge area" and "Category 3 recharge area.") Context: resource management strategies.

Category 2 recharge area — An area that is known to have a fairly high infiltration rate but that is not under the control of a water management agency. There may be little or no monitoring. (*Cf.* "Category 1 recharge area" and "Category 3 recharge area.") Context: resource management strategies.

Category 3 recharge area — An area with a lower infiltration rate that makes the area much less suitable for an artificial recharge program managed by a local water agency. Such areas may be subject to a lower degree of monitoring and management of potential contaminating activities. (*Cf.* "Category 1 recharge area" and "Category 2 recharge area.") Context: resource management strategies.

Central Valley Project (CVP) deliveries — (1) The volume of surface water supplied to a given area through the Central Valley Project. (2) CVP-Base Deliveries: The delivery of prior rights water to CVP contractors; CVP-Project Deliveries: The delivery of project water to CVP contractors. Context: (1) scenario factor, (2) water portfolio.

Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) — CV-SALTS is a regional collaborative salinity management effort.

check irrigation — Modification of a border strip with small earth ridges or restrictions (checks) constructed or inserted at intervals to retain water as it flows down the strip.

CIMIS — *See* "California Irrigation Management Information System (CIMIS)."

climate change — Changes in average annual temperature and precipitation and their monthly patterns in 2050 compared with today.

closed basin — A basin in which no stream naturally exits the basin.

cloud seeding — *See* "precipitation enhancement."

Colorado River deliveries — (1) The volume of water diverted from the Colorado River by Metropolitan Water District of Southern California, Imperial Irrigation District, Coachella Valley Water District, the Yuma Project, and others under California's entitlement to use Colorado River water. (2) California has the right to import from the Colorado River. California's allocation is 4.4 million acre-feet per year plus 50 percent of any declared surplus. Context: (1) water portfolio, (2) scenario factor.

commercial activity mix — The mix of high- and low-water-using commercial activity. Note that commercial activity is broken into two factors: total commercial activity and commercial activity mix. The latter allows designation of the type of commercial activity that is occurring. *See also* "total commercial activity." Context: scenario factor.

community water system — A public water system that serves at least 15 service connections used by yearlong residents or that regularly serves at least 25 yearlong residents. *See also* "public water system."

confined aquifer — An aquifer that is bounded above and below by formations of distinctly lower permeability than that of the aquifer itself. An aquifer containing confined groundwater. *See also* "artesian aquifer." (*Cf.* "unconfined aquifer" and "semi-confined aquifer.")

conjunctive management (use) of surface and groundwater storage — Coordinated and planned management of both surface and groundwater resources in order to maximize the efficient use of the resource; that is, the planned and managed operation of a groundwater basin and a surface water storage system combined through a coordinated conveyance infrastructure. Water is stored in the groundwater basin for later and planned use by intentionally recharging the basin during years of above-average surface water supply. Surface water and groundwater resources typically differ significantly in their availability, quality, management needs, and development and use costs. Managing both resources together, rather than in isolation from one another, allows water managers to use the advantages of both resources for maximum benefit. Context: resource management strategies.

conservation offset — Actions by the developer of a proposed project to save water at or above the demand level of the project. Context: resource management strategies.

conservation tillage — A tillage practice that leaves plant residues on the soil surface for erosion control and moisture conservation.

consumed fraction — The portion of agricultural applied irrigation water that satisfies evapotranspiration.

consumptive use — A quantity of applied water that is not available for immediate or economical reuse. It includes water that evaporates, transpires, or is incorporated into products, plant tissue, or animal tissue. Consumptively used water is removed from available supplies without return to a water resource system (in uses such as manufacturing, agriculture, landscaping, or food preparation; and, in the case of Colorado River water, water that is not returned to the river). (*Cf.* "nonconsumptive use.")

contaminant — Any substance or property preventing the use of, or reducing the usability of, water for ordinary purposes such as drinking, preparing food, bathing, washing, recreation, and cooling. Any solute or cause of change in physical properties that renders water unfit for a given use. (Generally considered synonymous with pollutant.)

contaminant plume — A mixture of chemicals or leachate in groundwater or surface water at a certain concentration or toxicity.

conveyance — A conveyance provides for the movement of water. Conveyance infrastructures include natural watercourses, such as streams, rivers, and groundwater aquifers; and constructed facilities, such as canals and pipelines, including control structures such as weirs. Conveyance facilities range in size from small, local, end-user distribution systems to large systems that deliver water to or drain areas as large as multiple hydrologic regions. Conveyance facilities also require associated infrastructure, such as pumping plants and power supply, diversion structures, fish ladders, and fish screens. Context: resource management strategies.

conveyance evaporation and evapotranspiration—ag — The irrecoverable water from major water supply conveyance systems due to evaporation and evapotranspiration by vegetation in and near canals that is attributed to water delivered to agricultural uses. Context: water portfolio.

conveyance evaporation and evapotranspiration—managed wetlands — The irrecoverable water from major water supply conveyance systems due to evaporation and evapotranspiration by vegetation in and near canals that is attributed to water delivered to managed wetlands uses. Context: water portfolio.

conveyance evaporation and evapotranspiration—urban — The irrecoverable water from major water supply conveyance systems due to evaporation and evapotranspiration by vegetation in and near canals that is attributed to water delivered to urban uses. Context: water portfolio.

conveyance facilities — Canals, pipelines, pump lifts, ditches, etc. used to move water from one area to another. Context: resource management strategies.

conveyance irrecoverable water — The amount of water that evaporates, is used by plants (evapotranspiration), and percolates to a salt sink during transport.

conveyance outflow — The outflow needed to meet water quality and beneficial uses in the Delta. *See also* "outflow."

conveyance outflow to Mexico — The estimated annual flow of water from the All-American Canal to seepage flowing to Mexico. Context: water portfolio.

conveyance return flows to developed supply (other HR)—Ag — The portion of agricultural conveyance water that seeps through channels and returns as surface flow in another hydrologic region. Context: water portfolio.

conveyance return flows to developed supply (other HR)—managed wetlands — The portion of managed wetlands conveyance water that seeps through channels and returns as surface flow in another hydrologic region. Context: water portfolio.

conveyance return flows to developed supply (other HR)—urban — The portion of urban conveyance water that seeps through channels and returns as surface flow in another hydrologic region. Context: water portfolio.

conveyance seepage—ag — The portion of agricultural conveyance water that seeps through channels and returns to surface or groundwater. Context: water portfolio.

conveyance seepage—managed wetlands — The portion of managed wetlands conveyance water that seeps through channels and returns to surface or groundwater. Context: water portfolio.

conveyance seepage—urban — The portion of urban conveyance water that seeps through channels and returns to surface or groundwater. Context: water portfolio.

cost of reliability enhancement — The total cost required to add an increment of reliability. Context: evaluation criteria.

cost of unreliability — The sum of the forgone long-term value and short-term costs incurred to the users. Context: evaluation criteria.

cost recovery — Cost recovery designates who (marginal or existing users) pays the marginal and existing water costs. It also specifies circumstances where other revenue sources are used to recover costs. Costs can include capital, operation and maintenance, financing, and environmental compliance (documentation, permitting, and mitigation). Context: scenario factor.

cover crop — A close-growing crop that provides soil protection, seeding protection, and soil improvement between periods of normal crop production or between trees in orchards and vines in vineyards. When plowed under and incorporated into the soil, cover crops may be referred to as green manure crops.

critical conditions of overdraft — Critical conditions of overdraft refers to a groundwater basin in which a continuation of present practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts. The definition was created after an extensive public input process during the development of DWR's Bulletin 118-80 report.

crop coefficient — A numerical factor (normally identified as Kp or Kc) that relates the evapotranspiration (ET) of an individual crop (ETc) to reference evaporation or some other index.

crop idling — The temporary or permanent fallowing of land previously under irrigation that results in a reduction in stresses to a water system (e.g., alternate land use must result in a reduction in water use or an enhancement of water quality, or both). Context: scenario factor.

crop rotation — A system of farming in which a succession of different crops are planted on the same land area, as opposed to growing the same crop time after time (monoculture).

crop unit water use —The volume of irrigation water used per unit area of land, commonly expressed in acre-feet per acre. As used in scenario evaluation, a change in unit water use can be a function of evapotranspiration rates and cultural practices, but not use efficiency. Agricultural use efficiency is captured under its own distinct factor. Context: scenario factor.

D

dedicated (or developed) water supplies — Water distributed among urban and agricultural uses, used to protect and restore the environment or for storage in surface water and groundwater reservoirs. In any year, some of the dedicated supply includes water that is used multiple times (reuse) and water held in storage from previous years. This is about 40 percent to 50 percent of the total annual water supply received from precipitation and imported from Colorado, Oregon, and Mexico. Context: water portfolio.

deep percolation — (1) Movement of applied water to a usable groundwater aquifer. Water that is applied for agricultural, urban, and managed wetlands in excess of the net use requirements. Water either is applied for groundwater recharge or percolates naturally to the water table. This does not include reuse, evaporation, evapotranspiration of applied water, or flows/percolation to a salt sink. (2) Percolation of water through the ground and beyond the lower limit of the root zone of plants into groundwater. Efficient agricultural and urban irrigation practices limit or eliminate deep percolation. Context: (1) water portfolio, (2) resource management strategies.

deep percolation depletion — Movement of applied water to a usable groundwater aquifer. The quantity of water consumed, discharged to salt sink within a service area, or moved outside the service area and no longer available as a source of supply within the service area.

Delta outflow — Freshwater outflow from the Sacramento-San Joaquin River Delta (Delta) to protect the beneficial uses within the Delta from the incursion of saline water.

Delta Primary Zone — This zone is the Sacramento-San Joaquin River Delta land and water area of primary State concern and statewide significance as described in Section 12220 of the California Water Code, but not within either the urban limit line or sphere of influence line of any local government's general plan or studies existing as of January 1, 1992. California Public Resources Code Section 29728 states: "The precise boundary lines of the Delta Primary Zone includes the land and water areas as shown on the map titled 'Delta Protection Zones' on file with the California State Lands Commission. Where the boundary between the primary zone and secondary zone is a river, stream, channel, or waterway, the boundary line shall be the middle of that river, stream, channel, or waterway." The Delta Primary Zone consists of approximately 500,000 acres.

Delta Secondary Zone — This zone is the Sacramento-San Joaquin River Delta (Delta) land and water area within the boundaries of the legal Delta not included within the Delta Primary Zone, subject to the land use authority of local government and that includes the land and water areas shown on the map referenced in "Delta Primary Zone," above. The Secondary Zone consists of approximately 238,000 acres. (California Public Resources Code Section 29731.)

depletion — The quantity of water consumed, discharged to a salt sink within a service area, or moved outside the service area and no longer available as a source of supply within the service area. Context: water portfolio.

desalination — A treatment process to remove salt from water for beneficial use. Source water can be brackish (low salinity) or seawater. *See* "total desalination."

detailed analysis units (DAUs) — DAUs are the smallest study area for the analysis of water supply and use.

detention pond — A basin that stores stormwater flows for a limited amount of time, thereby reducing the amount of flow downstream of the basin.

developed water supply — *See* "dedicated water supplies."

dewvaporation (atmospheric pressure desalination) — Desalination through humidification and subsequent dehumidification (collection of evaporated water). Context: resource management strategies.

direct diversions — The amount of water diverted from streams and rivers directly that is not withdrawn from storage in reservoirs. Context: water portfolio.

discharge area — An area where the groundwater that has been recharged flows out of the aquifer under natural conditions or is removed from the aquifer by wells. *See also* "recharge area." Context: resource management strategies.

distribution system (or water distribution system) — A system of ditches or conduits and their controls that conveys water from a supply canal to points of delivery.

domestic well — A water well used to supply water for the domestic needs of an individual residence or systems of four or fewer service connections.

drainage basin — *See* "watershed."

drinking water standards — State and federal regulations regarding water delivered by water purveyors that is used as a potable supply. Context: scenario factor.

drinking water system — *See* "public water system."

drinking water treatment and distribution — Treatment refers to the physical, biological, and chemical processes that make water suitable for potable use. Distribution includes storage, pumping, and pipe systems to protect and deliver treated water to customers.

drip irrigation — A method of micro irrigation wherein water is applied to the soil surface as drops or small streams through emitters. Discharge rates are generally less than 8 liters per hour (2 gallons per hour) for a single-outlet emitters and 12 liters per hour (3 gallons per hour) per meter for line-source emitters.

drought condition — Hydrologic conditions during a defined period, greater than one dry year, when precipitation and runoff are much less than average.

drought preparedness — The magnitude and probability of economic, social, or environmental consequences that would occur as a result of a sustained drought under a given study plan. Evaluation criteria measure the "drought tolerance" of study plans. Context: water management objectives.

drought year supply — The average annual supply of a water development system during a defined drought period.

dry-weather runoff — Dry-weather runoff occurs when, for example, excess landscape irrigation water flows to a storm drain.

duty of water — The total volume of irrigation water required to mature a particular type of crop. It includes consumptive use, evaporation, and seepage, as well as the water returned to streams by percolation and surface water.

E

economic incentives — Financial assistance and pricing policies intended to influence water management, including, for example, amount of use, time of use, wastewater volume, and source of supply. Context: resource management strategies.

ecosystem restoration — The activity of improving the condition of natural landscapes and biotic communities.

ecosystem valuation methods — Ecosystems perform a multitude of complex and interrelated functions that not only provide basic biological support, but also provide valuable goods and services to society (for example, enhanced water supply and quality, flood damage reduction, and recreation). If these goods and services can be identified and measured, then it may be possible to place monetary values on them using market or non-market valuation methods. Context: resource management strategies.

ecozone — *See* "bioregion."

effective porosity — The volume of voids or open spaces in alluvium and rocks that is interconnected and can transmit fluids.

effective precipitation — That portion of precipitation that supplies crop evapotranspiration. It includes precipitation stored in the soil before and during the growing season.

effective rooting depth — The depth from which soil moisture is extracted; it is determined by the crop rooting characteristics and soil depth limitations.

efficient water management practice (EWMP) — Efficient water management practice. Context: resource management strategies.

electrical conductivity (EC) — The measure of water's ability to conduct an electrical current, the magnitude of which depends on the dissolved mineral content of the water.

emerging contaminants — *See* "emerging pollutants."

emerging pollutants — Some unregulated chemicals and pollutants are being discovered to have unexpected health and environmental effects. Chemicals found in pharmaceuticals and personal care products, byproducts of fires and fire suppression, and discarded elements of nanotechnology are emerging as actual or potential water contaminants. Air deposition of a whole host of pollutants is now seen as a significant contributor to water pollution. Context: water quality and resource management strategies.

energy availability — The energy consumption to facilitate water-management-related actions such as desalting, pump-storage, groundwater extraction, conveyance, or treatment. This criterion pertains to the economic feasibility of a proposed water management action in terms of operations and maintenance costs. Context: evaluation criteria.

energy costs — The cost of energy use related to producing, conveying, and applying water. It also refers to the cost of energy use for processes and inputs not directly related to water but that can affect the demand for water (e.g., the cost of nitrogen fertilizer or tractor manufacturing). Context: scenario factor.

energy production — Both instantaneous capacity (megawatt) and energy produced (kilowatt hours). Context: evaluation criteria.

environmental justice — The fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies. (Government Code Section 65040.12 (c).)

environmental water — Minimum flow levels of a specific quality needed to ensure the continued viability of fish and wildlife resources for a particular water body. This is water used to maintain and enhance beneficial uses related to the preservation and enhancement of fish, wildlife, and other aquatic resources or preserves as specified in the Porter-Cologne Water Quality Control Act of 2008.

environmental water (flow-based) — The amount of water dedicated to instream fishery uses, wild and scenic rivers, required and actual Sacramento-San Joaquin River Delta outflow, and the Environmental Water Account.

environmental water (land-based) — The amount of water used for fresh- and brackish-water managed wetlands and native vegetation.

Environmental Water Account — An element of the CALFED Bay-Delta Program's overall management strategy for the San Francisco Bay/Sacramento-San Joaquin River Delta ecosystem. Its purpose is to protect fish of the Bay-Delta estuary through environmentally beneficial changes in the operations of the Central Valley Project and State Water Project.

environmental water quality — Water quality in terms of ecosystem health, recreation, salinity intrusion, usability per sector, treatment costs, etc. Aquatic species and water bodies are vulnerable to changes in water quality.

ETAW — *See* "evapotranspiration of applied water."

ETo (reference evapotranspiration) — The evapotranspiration rate from an extended surface of 3- to 6-inch-tall (8- to 15-centimeter-tall) green grass cover of uniform height, actively growing, completely shading the ground, and not short on water (the reference evapotranspiration rate reported by the California Irrigation Management Irrigation System).

eutrophic conditions — Eutrophic conditions exist in a body of water that has high primary productivity due to excessive nutrients and is subject to algal blooms, resulting in poor water quality. Typically, such a body of water is deficient in oxygen in the deeper regions — ranging from hypoxic to anoxic. These conditions do not favor fish species that require or prefer cold, well-oxygenated water, such as trout.

evaluation criteria — The technical information that will be used to compare the favorability of different response packages of resource management strategies against future scenarios in *California Water Plan Update 2013*. They are designed to identify and measure potential effects on water supply, the environment, energy use or production, recreational opportunities, groundwater overdraft, etc.

evaporation — The physical process by which a liquid or solid is transformed to a gaseous state. Evaporation from lakes means the annual surface evaporation from natural lakes, and evaporation from reservoirs means the annual surface evaporation from constructed surface water reservoirs. Context: water portfolio.

evaporation and evapotranspiration from native vegetation — The evaporation of precipitation from land surfaces and the evapotranspiration of precipitation by trees, brush, grass, and other plants. Context: water portfolio.

evaporation and evapotranspiration from unirrigated ag — The evaporation of precipitation and the evapotranspiration of precipitation by dry-farmed crops. Context: water portfolio.

evaporation and evapotranspiration from wastewater urban — The portion of urban wastewater that either evaporates or is used by plants. Context: water portfolio.

evaporation and evapotranspiration from wastewater urban — The portion of urban wastewater that either evaporates or is used by plants. Context: water portfolio.

evaporative demand — The collective influence of all climatic factors on the rate of evaporation of water.

evapotranspiration (ET) — The amount of water transpired by plants, retained in plant tissues, and evaporated from plant tissues and surrounding soil surfaces. *See also* "green water."

evapotranspiration of applied water — ETAW is the portion of evapotranspiration (ET) that was provided by applied irrigation water.

evapotranspiration of applied water (ETAW) — The amount of consumptive use by crops, landscapes, or other vegetation.

evapotranspiration of applied water—ag — The applied water consumptively used through evaporation and transpiration by agricultural crops. Context: water portfolio.

evapotranspiration of applied water—urban — The applied water consumptively used through evaporation and transpiration by urban areas, by parks and other recreation areas, and by energy production. Context: water portfolio.

evapotranspiration of applied water—wetlands — The applied water consumptively used through evaporation and transpiration by managed wetlands. Context: water portfolio.

excess Delta outflow — Freshwater outflow from the Sacramento-San Joaquin River Delta that exceeds the amount required by law. Context: water portfolio.

extraction wells — In the process of extracting groundwater for remediation, groundwater flows through the aquifer(s) toward the extraction wells, where it is removed for treatment. Context: resource management strategies.

F

finished water — Finished water is treated or conditioned to the point that it meets drinking water standards and is suitable for distribution to consumers for all potable water uses. Context: resource management strategies.

firm water supply — The Central Valley Project Improvement Act Section 3406(d) (Refuge Water Supply) establishes the primary goal of providing a "firm water supply" for wildlife refuges. *See also* "firm-yield approach."

firm-yield approach — To deliver the same amount every year regardless of water supply conditions. Context: resource management strategies.

flood event — A 100-year flood is a flood having a 1-percent chance of being equaled or exceeded in any given year. A structure located within a special flood hazard area shown on a National Flood Insurance Program map may have a 26-percent chance of suffering flood damage during the term of a 30-year mortgage.

flood fight — The emergency measures used to prevent levee failure from seepage, erosion, or overtopping during high water.

flood irrigation — A method of irrigation in which water is applied to the soil surface without flow controls, such as furrows, borders, or corrugations.

flood risk — The magnitude and probability of consequences that would occur as a result of flood-induced infrastructure damage under a given study plan. Context: evaluation criteria.

floodplain management — Actions designed to reduce risks to life, property, and the environment due to flooding. Actions can include watershed management, infrastructure construction and operation, variations in land use practices, floodway designations, etc.

flow diagram — A diagram that characterizes a region's hydrologic cycle by documenting sources of water, such as precipitation and inflows, and tracks the water as it flows (through many different uses) to its ultimate destinations.

flow diagram table — An itemized listing of all the categories contained in a flow diagram but including more detailed information, organized by "inputs" and "withdrawals."

fluvial — The processes associated with rivers and streams comprising the motion of sediment and erosion of or deposition on the river bed.

forecast-coordinated operations (FCOs) — Forecast-coordinated operations refers to improving tools to forecast precipitation and river flows to allow drawing down flood management reservoirs in anticipation of major

runoff so that more reservoir space is available to control downstream flood releases from a reservoir without affecting water supply. Context: resource management strategies.

forgone use — The difference between the quantity of water demanded and the supply available for use. Context: risk management.

full cost — (1) all monetary costs associated with project planning, implementation, financing, or impact mitigation plus any recurring costs required to sustain benefits; *plus* (2) all nonmonetary costs that are incurred either at implementation or on a recurring basis, such as unmitigable environmental or cultural impacts, public trust, environmental justice, or other nonmarket-based societal values. (Coincides with California Environmental Quality Act/National Environmental Policy Act study requirements and other permitting requirements.) Context: planning concept/consideration.

furrow irrigation — A method of surface irrigation in which water is supplied to small ditches or furrows and guided across a field.

G

goals — The water plan's goals are the desired outcome of the water plan over its planning horizon. The goals are founded on the statewide vision. Meeting the goals requires coordination among State, federal, tribal, and local governments and agencies. Context: Update 2013 strategic plan.

gray water — Health and Safety Code Section 17922.12 defines gray water as "untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. [Gray water] includes but is not limited to wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers."

gray water footprint — The gray water footprint of a product is an indicator of freshwater pollution that can be associated with the production of a product over its full supply chain. It is defined as the volume of fresh water that is required to assimilate the load of pollutants based on existing ambient water quality standards. It is calculated as the volume of water that is required to dilute pollutants to such an extent that the quality of the water remains above agreed water quality standards. This definition differs from general urban water use terms in which gray water is any wastewater that comes from an urban dwelling that does not contain bodily wastes (for example, washing machine effluent).[3] *See also* "Urban Wastewater Produced."

grayfield land — *See* "brownfields."

green water — The precipitation on land that does not run off or recharge the groundwater but is stored in the soil or temporarily stays on top of the soil or vegetation. Eventually, this part of precipitation evaporates or transpires through plants. Green water can be made productive for crop growth (but not all green water can be taken up by crops, because there will always be evaporation from the soil and because not all periods of the year or areas are suitable for crop growth).[4] *See also* "Conveyance Seepage-Ag" and "Ag Effective Precipitation on Irrigated Lands."

green water footprint — The volume of rainwater consumed during the production process. This is particularly relevant for agricultural and forestry products (products based on crops or wood), where it refers to the total rainwater evapotranspiration (from fields and plantations) plus the water incorporated into the harvested crop or wood.[5] *See also* "Ag Effective Precipitation on Irrigated Lands."

---

[3] Definition taken in part from: Hoekstra AY, Chapagain AK, Aldaya MM and Mekonnen MM. 2011. *The water footprint assessment manual: Setting the global standard*. London, United Kingdom: Earthscan. Viewed online at: http://www.waterfootprint.org/?page=files/WaterFootprintAssessmentManual. Accessed: April 18, 2012.

[4] Definition taken in part from: Hoekstra AY, Chapagain AK, Aldaya MM and Mekonnen MM. 2011. *The water footprint assessment manual: Setting the global standard*. London, United Kingdom: Earthscan. Viewed online at: http://www.waterfootprint.org/?page=files/WaterFootprintAssessmentManual. Accessed: April 18, 2012.

[5] Definition taken in part from: Hoekstra AY, Chapagain AK, Aldaya MM and Mekonnen MM. 2011. *The water footprint assessment manual: Setting the global standard*. London, United Kingdom: Earthscan. Viewed online at: http://www.waterfootprint.org/?page=files/WaterFootprintAssessmentManual. Accessed: April 18, 2012.

greenhouse gas emissions (GHGs) — Also referred to as carbon intensity or carbon footprint, GHGs contribute to climate change. The storage and transportation of water generates hydroelectricity, which is California's largest source of energy that does not produce GHG emissions. At the same time, though, water conveyance, groundwater extraction, water and wastewater treatment, and especially water use, can involve the use of substantial amounts of carbon-based energy, which in turn results in GHG emissions that contribute to climate change. Each water management strategy should be evaluated for its contribution to the accumulation of GHGs in our atmosphere. According to the U.S. Energy Information Administration, major greenhouse gases include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_20), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

groundwater — Water that occurs beneath the land surface and fills the pore spaces of the alluvium, soil, or rock formation in which it is situated. It excludes soil moisture, which refers to water held by capillary action in the upper unsaturated zones of soil or rock. Groundwater classified as underflow of a surface water system, a "subterranean stream flowing through a known and definite channel," is subject to statutory permitting processes. However, most groundwater in California is presumed to be "percolating water" (i.e., water in underground basins and groundwater that has escaped from streams and is not subject to a permitting process). *See also* "subterranean stream."

groundwater bank — Groundwater banks consist of water that is "banked" during wet or above-average years. The water user stores water in the ground via in-lieu recharge, direct recharge, or injection wells, to be pumped for future use; this is not a sale or lease of water rights. Context: resource management strategies.

groundwater basin — An alluvial aquifer or a stacked series of alluvial aquifers with reasonably well-defined boundaries in a lateral direction and having a definable bottom. *See also* "recharge basin."

groundwater budget — A numerical accounting —the groundwater equation — of the recharge, discharge, and changes in storage of an aquifer, part of an aquifer, or a system of aquifers.

groundwater extractions—adjudicated — The amount of water withdrawn from basins that have been adjudicated from the beginning of the water year to the end of the water year. Context: water portfolio.

groundwater extractions—banked — The amount of water withdrawn from formal interagency banking programs from the beginning of the water year to the end of the water year. Context: water portfolio.

groundwater extractions—unadjudicated — The amount of water withdrawn from basins that is not adjudicated nor part of a contract banking program from the beginning of the water year to the end of the water year. Context: water portfolio.

groundwater in storage — The quantity of water in the zone of saturation.

groundwater management — The planned and coordinated management of a groundwater basin or portion of a groundwater basin with a goal of long-term sustainability of the resource.

groundwater management plan — A comprehensive written document developed for the purpose of groundwater management and adopted by an agency having appropriate legal or statutory authority.

groundwater mining — The process, deliberate or inadvertent, of extracting groundwater from a source at a rate in excess of the replenishment rate such that the groundwater level declines persistently, threatening exhaustion of the supply or at least a decline of pumping levels to uneconomic depths.

groundwater monitoring network — A series of monitoring wells at appropriate locations and depths to effectively cover the area of interest. Scale and density of monitoring wells is dependent on the size and complexity of the area of interest and the objective of monitoring.

groundwater net change in storage — The difference between water extracted from and water recharged into groundwater basins in a region. Context: water portfolio.

groundwater overdraft — The condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years during which water supply conditions approximate average conditions.

groundwater quality — Water quality can affect supply integrity. Many pollutants are hydrophilic and not easily filtered by soil. Treated groundwater can be added to water supply. *See also* "water quality." Context: evaluation criteria.

groundwater recharge — Groundwater recharge is the mechanism by which surface water moves from the land surface through the topsoil and subsurface into de-watered aquifer space or is injected directly into the aquifer by wells. Groundwater recharge can be either natural or managed. Groundwater recharge applied water use is the amount of intentional water application to increase deep percolation; groundwater recharge evaporation and evapotranspiration (GW recharge E+ET) is the amount of evaporation and evapotranspiration occurring from intentional groundwater recharge. Context: resource management strategies. *See also* "total groundwater natural recharge."**groundwater recharge facility —** A structure that serves to conduct surface water into the ground for the purpose of replenishing groundwater. The facility may consist of dug or constructed spreading basins, pits, ditches, furrows, streambed modifications, or injection wells.

groundwater recharge—adjudicated basins — The amount of water recharged into groundwater basins that have been adjudicated by a court of law. Context: water portfolio.

groundwater recharge—contract banking — The amount of water recharged into groundwater basins under formal contract programs. Context: water portfolio.

groundwater recharge—unadjudicated basins — The amount of water recharged into groundwater basins that are neither adjudicated nor part of formal contract banking programs. Context: water portfolio.

groundwater remediation/aquifer remediation — Groundwater remediation involves extracting contaminated groundwater from an aquifer, treating it, and then either putting it back in the aquifer or using it for agricultural or municipal purposes. Aquifer remediation is usually accomplished by treating groundwater while it is still in the aquifer, using in-situ methods involving biological, physical, or chemical treatment or electrokinetics. Context: resource management strategies.

groundwater source area — An area where groundwater may be found in economically retrievable quantities outside of normally defined groundwater basins. This generally refers to areas of fractured bedrock in foothill and mountainous terrain where groundwater development is based on successful well penetration through interconnecting fracture systems. Well yields are generally lower in fractured bedrock than within groundwater basins. (*Cf.* "groundwater basin.")

groundwater storage — Groundwater storage can be defined in three different ways depending on the context of its use: (a) the quantity of water that occurs beneath the land surface and fills the pore spaces of the alluvium, soil, or rock formation beneath the land surface; (b) the volume of usable physical space available to store water in the pore spaces of the alluvium, soil, or rock formation beneath the land surface; (c) the act of storing water in the pore spaces of the alluvium, soil, or rock formation beneath the land surface. Context: resource management strategies.

groundwater storage capacity — The volume of void space that can be occupied by water in a given volume of a formation, aquifer, or groundwater basin.

groundwater subbasin — A subdivision of a groundwater basin created by dividing the basin using geologic and hydrologic conditions or institutional boundaries. *See* "groundwater basin."

groundwater subsurface inflow — The amount of water that flows into a region underground. Context: water portfolio.

groundwater subsurface outflow — The amount of water that flows out of a region underground. Context: water portfolio.

groundwater table — The upper surface of the zone of saturation in an unconfined aquifer.

guiding principles — Guiding principles describe the core values and philosophies that dictate how to achieve a vision, mission, and goals. In other words, guiding principles describe how to make decisions and do business. Context: Update 2013 strategic plan.

H

halophytes — Very salt-tolerant grasses.

hazardous waste — Waste that poses a present or potential danger to human beings or other organisms because it is toxic, flammable, radioactive, or explosive or has some other property that produces substantial risk to life.

hydraulic barrier — A barrier created by injecting fresh water to control seawater intrusion in an aquifer or that is created by injecting water to control migration of contaminants in an aquifer.

hydraulic conductivity — A measure of the capacity for a rock or soil to transmit water; this generally is expressed in units of feet per day or centimeters per second.

hydrograph — A graph that shows some property of groundwater or surface water as a function of time at a given point.

hydrologic basin — Where conceptually any drop of water that falls in the basin will flow to a stream or groundwater basin within it. A subset is the groundwater basin, which can be within a hydrologic basin. DWR's hydrologic regions are collections of the larger hydrologic basins. Basin names are based on published and unpublished reports, topographic maps, and local terminology. Names of more recently delineated basins or subbasins are based on the principal geographic feature, which in most cases corresponds to the name of a valley. In the case of a subbasin, its formal name should include the name of the basin (for example, Sacramento Valley Groundwater Basin, North American Subbasin). However, both locally and informally, the term subbasin is used interchangeably with basin (for example, North American Basin).

hydrologic cycle — The circulation of water from the ocean through the atmosphere to the land and ultimately back to the ocean.

hydrologic region — A geographical division of the state based on the local hydrologic basins. DWR divides California into 10 hydrologic regions, corresponding to the state's major water drainage basins: North Coast, San Francisco Bay, Central Coast, South Coast, Sacramento River, San Joaquin River, Tulare Lake, North Lahontan, South Lahontan, and Colorado River.

hydrologic unit — The United States is divided and subdivided into successively smaller hydrologic units, which are classified into four levels: regions, subregions, accounting units, and cataloging units. The hydrologic units are arranged within each other, from the smallest (cataloging units) to the largest (regions). Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to eight digits based on the four levels of classification in the hydrologic unit system. (*Visit* http://water.usgs.gov/GIS/huc.html for more information.)

hydrology — A science related to the occurrence and distribution of natural water on Earth, including the annual volume and the monthly timing of runoff.

hydromodification — Channel modification (channelization), flow alterations, levees, and dams.

hydrostratigraphy — A geologic framework consisting of a body of rock having considerable lateral extent and composing a reasonably distinct hydrologic system.

hyporheic zone — The region of saturated sediments beneath and beside the active channel and that contain some proportion of surface water that was part of the flow in the surface channel and went back underground and can mix with groundwater.

hypoxic zone — As defined by the U.S. Geological Survey's Toxic Substances Hydrology Program, "Zones of hypoxia develop in water bodies, typically estuaries and coastal waters, when dissolved oxygen concentrations fall below the level to sustain most aquatic animal life. Hypoxia can be caused by a variety of factors, including excess nutrients, primarily nitrogen and phosphorus, and water body stratification due to saline or temperature gradients. These excess nutrients, eutrophication, promote algal growth. As dead algae decompose, oxygen is consumed in the process, resulting in low levels of oxygen in the water."

I

indirect reuse — When a downstream entity withdraws water from a stream and a portion of that water is wastewater from an upstream discharge that has commingled with the ambient streamflow, the reuse is termed "indirect reuse." Context: resource management strategies.

industrial activity mix — A mix of high- and low-water-using industrial activity. Note that industrial activity is broken into two factors: total industrial activity and industrial activity mix. The latter factor allows designation of the type of industry that is occurring. This is necessary to account for the large variation in water demands by industry type. *See also* "total industrial activity." Context: scenario factor.

infiltration — The flow of water downward from the land surface into and through the upper soil layers.

infiltration basin — A shallow basin designed to infiltrate stormwater into the ground.

infiltration capacity — The maximum rate at which infiltration can occur under specific conditions of soil moisture.

inflow from Mexico — The New River and Alamo River inflows from Mexico. Context: water portfolio.

inflow from Oregon — Klamath River inflow from Oregon. Context: water portfolio.

infrastructure — The underlying foundation or basic framework of a system. For water, this includes the canals, pipelines, pumps, reservoirs, and treatment plants that make up a treatment and delivery system.

injection wells — Injection wells are used primarily to recharge confined aquifers. The design of an injection well for artificial recharge is similar to that of a water supply well. The principal difference is that water flows from the injection well into the surrounding aquifer under either a gravity head or a head maintained by an injection pump. Context: resource management strategies.

in-lieu recharge — The practice of providing surplus surface water to historical groundwater users, thereby leaving groundwater in storage for later use. (*Cf.* "groundwater recharge.")

instream environmental — Instream flows used only for environmental purposes. Context: water balance.

instream flow net water use — The use of water within its natural watercourse as specified in an agreement, water rights permit, court order, Federal Energy Regulatory Commission license, or other State or federal requirement. Context: water portfolio.

instream flows — The use of water within its natural watercourse as specified in an agreement, water rights permit, court order, Federal Energy Regulatory Commission license, etc. They support natural ecosystems; create habitat for plants and animals; and may provide additional benefits, such as recreation. *See also* "required instream flows." Context: water portfolio.

instream recharge — Recharge that allows water to percolate through a streambed itself. Context: resource management strategies.

instream uses — The beneficial uses of water within a stream for river without diversion from the stream.

integrated flood management — A comprehensive approach to flood management that considers land and water resources at a watershed scale within the context of integrated water management, employs both structural and non-structural measures to maximize the benefits of floodplains and minimize loss of life and damage to property from flooding, and recognizes the benefits to ecosystems from periodic flooding.

integrated on-farm drainage management — An integrated agricultural water management system that applies subsurface drainage water to a sequence of increasingly salt-tolerant crops. Context: resource management strategies.

integrated regional water management (IRWM)— Integrated regional water management incorporates the physical, environmental, societal, economic, legal, and jurisdictional aspects of water management into regional solutions through open, collaborative stakeholder processes to promote sustainable water use. IRWM improves water management and helps ensure economic stability, environmental stewardship, public safety, and other benefits.

Integrated Water Resources Information System (IWRIS) — IWRIS, released by DWR in 2008, was the first centralized groundwater data management system developed to help local and regional water management entities integrate and analyze their groundwater data and groundwater management processes with respect to integrated water planning. *See also* "Water PIE."

intercropping — The simultaneous planting of two or more crops in the same field. The practice is used to help control pest populations that can occur on monoculture crops, sometimes called "polycropping" or "plant stratification."

interfluves — Smaller watersheds or areas outside of the larger watershed boundaries used at the regional planning scale.

interregional import projects — Movement of water between hydrologic regions through mechanisms such as the State Water Project and federal water projects. Context: scenario factor.

interties — An interconnection permitting passage of utility service (e.g., water or electricity) between two or more systems, such as electric and water utility systems.

invasive species — Non-indigenous plants or animals that adversely affect the habitats they invade economically, environmentally, or ecologically.

ion exchange — Processes of purification, separation, and decontamination of aqueous and other ion-containing solutions with solid ion exchangers such as sodium carbonate used for water softening. Context: water quality.

irrecoverable water — The amount of applied water that flows to or percolates to a salt sink, is used by the growth process of plants (evapotranspiration), or evaporates from a conveyance facility or drainage canal. *See* "recoverable water."

irrigation efficiency (IE) — The efficiency of water application and use, calculated by dividing a portion of applied water that is beneficially used by the total applied water, expressed as a percentage. The two main beneficial uses are crop water use (evapotranspiration, ETc) and leaching to maintain a salt balance.

irrigation water requirements — The quantity of water exclusive of precipitation that is required from various uses.

J

joint powers agreement (JPA) — An agreement entered into by two or more public agencies that allows them to jointly exercise any power common to the contracting parties. JPA is defined in California Government Code Title 1, Division 7, Chapter 5 (commencing with Section 6500).

K

Keyline systems — Keyline systems of water and soil conservation were developed in Australia during the 1950s by P.A. Yeomans as a response to increasing desertification and erosion of the landscape. Keyline agriculture is a permaculture farming technique offering holistic farm design. Keyline is a set of principles, techniques, and systems, which coordinate into a development plan for rural and urban landscapes. The result is a strategic master plan to develop the natural or existing landscape through regeneration and enhancement. On Keyline properties, the typical vistas are of lakes with water birds, roads along the contours and ridge lines, contour tree belts, healthy crops, and green pasture growing in dark biologically fertile soil. Context: resource management strategies.

L

lacustrine — Natural lakes, ponds, and human-made reservoirs ecosystems.

land subsidence — The lowering of the natural land surface due to groundwater (or oil and gas) extraction.

law of demand — People will purchase less of a good or service as its price increases.

leaching efficiency — The ratio of the average salt concentration in drainage water to an average salt concentration in the soil water of the root zone when near field capacity.

leaching requirements — The fraction of water entering the soil that must pass through the root zone in order to prevent soil salinity from exceeding a specific value.

leaky confining layer — A low-permeability layer that can transmit water at sufficient rates to furnish some recharge from an adjacent aquifer to a well.

legacy pollutants — Examples of legacy pollutants are mercury, extracted from the Coast Ranges and used to process gold in the Sierra Nevada mines in the 19th century; industrial chemicals such as polychlorinated biphenyls (PCBs), used in electrical transformers; and pesticides such as dichloro-diphenyl-trichloroethane (DDT). Context: water quality and resource management strategies.

lithologic log — A record of the lithology of the soils, sediments, or rock encountered in a borehole from the surface to the bottom.

lithology — The description of rocks, especially in hand specimens and in outcrops, on the basis of such characteristics as color, mineralogic composition, and grain size.

local deliveries — The amount of water delivered by local water agencies and individuals. It includes direct deliveries of water from streamflows, as well as local water storage facilities. It also includes water supply for instream and wild and scenic river flows — a change from *California Water Plan Update 2005*, wherein there was a separate category for dedicated environmental water. Context: water portfolio.

local imports — The amount of water transferred by local agencies from other regions of the state. Context: water portfolio.

low-impact development (LID) — LID uses site design and stormwater management to maintain the site's pre-development runoff rates and volumes. Design techniques filtrate, filter, store, evaporate, and detain runoff close to the source of rainfall. LID can be used to benefit water quality and to address the modifications to the hydrologic cycle, and it can be a means to augment local water supply through either infiltration or water harvesting. LID is seen in California as an alternative to conventional stormwater management. Context: resource management strategies.

M

managed wetlands applied water use — The applied water use for managed wetland areas. Context: water portfolio.

management allowable depletion (MAD) — The percent of available water which an irrigator will allow plants to deplete before irrigating, or the depth of water that an irrigator will allow plants to extract from the root zone between irrigations.

management objectives — Objectives that set forth the priorities and measurable criteria of water management. Examples include: improve water quality, augment water supplies, and improve use efficiency.

matching water quality to use — A resource management strategy that recognizes that not all water uses require the same quality of water. High-quality water sources can be used for drinking and industrial purposes that benefit from higher quality water, and lesser-quality water can be desirable for some uses, such as riparian streams with plant materials benefiting fish. Context: resource management strategies.

maximum contaminant level (MCL) — The highest drinking water contaminant concentration allowed under federal and State Safe Drinking Water Act regulations.

Mediterranean climate — Most of California has this type of climate, characterized by cool, rainy winters and dry summers.

micrograms per liter — µg/L

microirrigation — The frequent application of small quantities of water as drops, tiny streams, or miniature spray through emitters or applicators placed along a water delivery line. Microirrigation encompasses a number of methods or concepts, such as bubbler, drip, trickle, mist, and spray irrigation.

mission statement — The California Water Plan's mission statement describes the plan's unique purpose and its overarching reason for existence. It identifies what the plan should do, why, and for whom. Context: Update 2013 strategic plan.

mitigation (measurements/strategies) — Reduction of human activities that affect global climate change; it includes strategies to reduce greenhouse gas emissions.

multicropping — The practice of consecutively producing two crops (double cropping) or more of either like or unlike commodities on the same land within the same year. An example of double cropping might be to harvest a wheat crop by early summer and then plant corn or beans on that acreage for harvest in the fall. Suitable climates and reliable water supplies are important factors with this practice.

municipal wastewater — Municipal wastewater is primarily from domestic sources but also includes wastewater from commercial, industrial, and institutional sources that discharge to a common collection system where it mixes with domestic wastewater before treatment. Context: resource management strategies.

N

natural recharge — Replenishment of an aquifer generally from snowmelt and runoff, through seepage from the surface. Recharge of an aquifer that occurs without human interference — also referred to as unintentional recharge.

naturally occurring conservation — *See* "background water conservation."

naturally occurring contaminants — Contaminants that exist but are not human-made or human-introduced. They are considered pollutants when they exceed natural levels.

net groundwater — The amount of groundwater extraction in excess of deep percolation. Context: water portfolio.

net water savings — Reduction in the amount of water used that becomes available for other purposes while maintaining or improving crop yield. Context: the resource management strategy on agricultural water use efficiency.

net water use (demand) — The amount of water needed in a water service area to meet all requirements. It includes the consumptive use of applied water, the irrecoverable water from the distribution system, and the outflow leaving the service area. It does not include reuse of water within a service area. *See also* "applied water use." Context: water portfolio.

new water — Water that is legally and empirically available for a beneficial use; it can be developed through many strategies, such as capture of surplus water, desalination of ocean water, and reductions in depletion. (This is the same as "real water.") The term denotes, in part, recycled water that is an augmentation to the state's overall water supply, such as the reuse of wastewater discharged to the ocean, rather than planned reuse of wastewater inland where unplanned indirect reuse may already be occurring downstream. The Recycled Water Task Force made this distinction in estimating future potential. Of an estimated potential of 1.5 million acre-feet per year of additional recycled water use by 2030, 1.2 million acre-feet per year was estimated to be "new water." *See also* "saved water." Context: planning concept/consideration and resource management strategies.

nonconsumptive environmental water use — Water dedicated to instream environmental needs that does not reduce the available water supply downstream for other uses.

nonpoint source (NPS) pollution — Pollution discharged over a wide land area, not from one specific location. These are forms of diffuse pollution caused by sediment, nutrients, etc., carried to lakes and streams by surface runoff. *See also* "point source."

nontransient noncommunity water system — A nontransient noncommunity water system serves the same people for at least six months per year. (*Cf.* "transient noncommunity water system.")

normal — Usage: DWR used to "normalize" data for water supply and uses by compensating for those factors that would cause an increase or decrease in water supply, but that process is largely discontinued. Actual water has been used for the balances starting with *California Water Plan Update 2005*. Use of "normal" often refers to that traditional process. Regarding California precipitation, there really is not a "normal" year, but there *can* be average rainfall and storage numbers. (*Cf.* "average.")

O

objectives — Objectives describe actions and reasons for those actions in order to accomplish one or more goals. Context: Update 2013 strategic plan.

offstream recharge — Offstream recharge uses suitable recharge sites outside a streambed. In some operations, water must be pumped some distance from its source to an offstream recharge area. Context: resource management strategies.

oligotrophic — Low in basic nutrients for plants (Lake Tahoe is an example).

operational flexibility — The temporal or spatial operational efficiency of existing and proposed infrastructure to maximize benefits. Context: evaluation criteria.

operational yield — An optimal amount of groundwater that should be withdrawn from an aquifer system or a groundwater basin each year. It is a dynamic quantity that must be determined from a set of alternative groundwater management decisions subject to goals, objectives, and constraints of the management plan.

optimal fluoridation — When a water treatment facility and distribution system are able to provide a consistent level of fluoride at the appropriate prophylactic level. Context: water quality.

ordinance — A law set forth by a governmental authority.

other federal deliveries — The sum of deliveries from federal projects other than the Central Valley Project. Context: water portfolio.

other interregional import deliveries — This factor is intended to capture the interregional movement of water for "projects" such as the Russian River, Trinity River exports, or Putah South Canal. Note that the project name must be specified in the study plan narrative. Context: scenario factor.

outflow — The amount of applied water and conveyance water leaving a service area; also conveyance outflow. *See also* other "outflow" entries within the context of the water portfolio.

outflow to Mexico — Runoff that flows from California to Mexico. Context: water portfolio.

outflow to Nevada — Runoff that flows from California to the state of Nevada. Context: water portfolio.

outflow to Oregon — Runoff that flows from California to the state of Oregon. Context: water portfolio.

overdraft — *See* "groundwater overdraft."

overlying right — Property owners above a common aquifer possess a mutual right to the reasonable and beneficial use of a groundwater resource on land overlying the aquifer from which the water is taken. Overlying rights are correlative (related to each other), and overlying users of a common water source must share the resource on a pro rata basis in times of shortage. A proper overlying use takes precedence over all non-overlying uses.

P

pelagic fish — Fish that live in open water, often near the surface. Many river-dwelling anadromous fishes, such as shad, are also pelagic spawners.

perched groundwater — Groundwater supported by a zone of material of low permeability located above an underlying main body of groundwater.

percolating water — Water in underground basins and groundwater that has escaped from streams and is not subject to a permitting process. Context: resource management strategies.

percolation — The process in which water moves through a porous material, usually surface water migrating through soil toward a groundwater aquifer.

perennial yield — The maximum quantity of water that can be withdrawn annually from a groundwater basin over a long period of time (during which water supply conditions approximate average conditions) without developing an overdraft condition.

permeability — The capability of soil or other geologic formations to transmit water.

pesticide — Any of a class of chemicals used for killing insects, weeds, or other undesirable entities. Pesticides are most commonly associated with agricultural activities, but they also have significant domestic use in California.

petrichor — The pleasant smell that accompanies the first rain after a dry spell.

planning area (PA) — A subsection of a hydrologic region containing a number of detailed analysis units (DAUs).

point source — A specific site from which wastewater or polluted water is discharged into a water body. *See also* "nonpoint source."

pollution (of water) — The alteration of physical, chemical, or biological properties of water by the introduction of any substance into it that adversely affects the water's beneficial uses.

pollution prevention — Improving water quality for all beneficial uses by protecting water at its source, reducing the need and cost for other water management actions and treatment. Context: resource management strategies.

population density — The average number of people per square mile for a planning area. Context: scenario factor.

population distribution — The geographic location within California of the population projection. Context: scenario factor.

population projection — The 2030 forecast of population made by the California Department of Finance or other agencies. Context: scenario factor.

porosity — The ratio of the voids or open spaces in alluvium and rocks to the total volume of the alluvium or rock mass.

possible contaminating activity (PCA) — Human activities that are actual or potential origins of contamination for a drinking water source. PCAs include sources of both microbiological and chemical contaminants that could have an adverse effect upon human health.

precautionary principle approach — When an activity raises threats to the environment or human health, precautionary measures are taken even if some cause-and-effect relationships are not fully established. Key elements of the principle include exercising precaution in the face of scientific uncertainty; exploring alternatives to possibly harmful actions; placing the burden of proof on proponents of an activity rather than on victims or potential victims of the activity; and using democratic processes to carry out and enforce the principle, including the public right to informed consent. Context: resource management strategies.

precipitation — The amount of precipitation that falls on an area as either rain or snow. Context: water portfolio.

precipitation enhancement — The action of artificially stimulating clouds ("cloud seeding") to produce more rainfall/snowfall than would occur naturally. Context: resource management strategies.

prescriptive right — Rights obtained through the open and notorious adverse use of another's water rights. By definition, adverse use is not the use of a surplus, but the use of non-surplus water to the direct detriment of the original rights holder.

privately owned water systems — These include investor-owned utilities, mutual water companies, mobile home parks, and water associations. They also may include various commercial enterprises, such as restaurants, hotels, resorts, and employee housing, that have their own water supply.

public goods — Public benefits are obtained from providing goods and services that are consumed by society as a whole (national defense, police protection, highways, parks, etc.). Public goods usually are not exchanged in a market place, and consumption of these goods by one individual does not preclude consumption by other individuals. Context: ecosystem valuation methods.

public trust doctrine — A legal doctrine recognizing public rights in the beds, banks, and waters of navigable waterways, and the State's power and duty to exercise continued supervision over them as trustee for the benefit of the people.

public water system — A system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year. *See also* "community water system."

pueblo right — A water right possessed by a municipality that, as a successor of a Spanish or Mexican pueblo, is entitled to the beneficial use of all needed naturally occurring surface water and groundwater of the original pueblo watershed. Pueblo rights are paramount to all other claims.

purple pipes — Part of a dual piping network. The color of pipe used to distribute reclaimed water to distinguish it from potable water. Context: resource management strategies.

R

Ranney collectors — Horizontal wells adjacent to or under the bed of a stream.

rate structure — A rate structure designates the rate basis for cost recovery (e.g., flat, uniform, or tiered). Block/tiered rates are assumed to provide cost signals to consumers. Costs can include capital, operation and maintenance, financing, environmental compliance (documentation, permitting and mitigation), etc. Context: scenario factor.

real water — Estimates of real water are the estimates of the water supply benefits from the transfer to the water system. There is a risk that these estimates will be inaccurate and that the transfers have unintended consequences to other water users, local economies, or the environment. A key challenge is to improve methods for quantifying these uncertainties and to include adequate monitoring and assurances when implementing water transfers. *See also* "new water." Context: resource management strategies.

recharge — Water added to an aquifer or the process of adding water to an aquifer. Groundwater recharge occurs either naturally as the net gain from precipitation or artificially as the result of human influence. *See also* "artificial recharge."

recharge area — An area where surface water infiltrates into the ground and reaches a saturated zone in either an unconfined aquifer or a confined aquifer. The recharge area for an unconfined aquifer is the ground surface above the aquifer. The recharge area for a confined aquifer is always some distance away from the area where wells have been built that extract groundwater from the aquifer. In other cases, recharge of the confined aquifer may occur only where a stream has eroded through the aquitard into the confined aquifer, allowing recharge to occur through the stream bottom. *See also* "discharge area." Context: resource management strategies.

recharge area protection — The action of keeping recharge areas from being paved over or otherwise developed and guarding the recharge areas so they do not become contaminated. Context: resource management strategies.

recharge basin — A surface facility constructed to infiltrate surface water into a groundwater basin. Recharge basins are frequently used to recharge unconfined aquifers. Water is spread over the surface of a basin or pond in order to increase the quantity of water infiltrating into the ground and then percolating to the water table. Recharge basins concentrate a large volume of infiltrating water on the surface. As a result, a groundwater mound forms beneath the basin. *See also* "groundwater recharge" and "groundwater recharge facility."

reclaimed water — (1) Treated water or the effluent from any water treatment plant where the inflow water supply is polluted, contaminated, or otherwise tainted. (*See also* "recycled water.") (2) From California Water Code Section 26: "For the purposes of this code, 'recycled water' or 'reclaimed water' has the same meaning as recycled water as defined in subdivision (n) of Section 13050." From California Water Code Section 13050: "'Recycled water' means water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource." Context: (1) water portfolio.

recoverable water — The amount of applied water that is available for supply or reuse, including surface runoff to non-saline bodies of water and deep percolation that becomes groundwater. *See* "irrecoverable water."

recreation — Water-dependent recreation activities that are consumptive (e.g., parks), flat-water (e.g., boating), or flow-based (e.g., whitewater rafting). Context: scenario factor.

recreation (reservoir-based) — Flat-water recreation, such as boating and skiing, in the form of future storage facilities as well as operation of existing surface storage facilities. Context: recreation sport-fish populations (i.e., populations of fish species that support recreational fishing).

recreation (watercourse-based) — Activities that are dependent on instream flows, such as whitewater rafting.

recycled water — (1) The application of treated water/reclaimed water to meet a beneficial use, supplanting a potable or potentially potable supply. *See also* "reclaimed water." (2) Treated municipal, industrial, or agricultural wastewater to produce water that can be reused. *See also* "indirect reuse." (3) From California Water Code Section 26: "For the purposes of this code, 'recycled water' or 'reclaimed water' has the same meaning as recycled water as defined in subdivision (n) of Section 13050." From California Water Code 13050: "'Recycled water' means water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource." Context: (1) water portfolio, (2) resource management strategies.

recycled water—urban desalination — The reclamation of water through desalination for urban uses. Context: water portfolio.

recycled water—urban wastewater — The treatment of urban wastewater for reuse. Context: water portfolio.

regional exports — Water transferred out of a hydrologic region. Context: water portfolio.

regional imports — Water transferred into a hydrologic region from an adjoining area. Context: water portfolio.

regional self-sufficiency — The degree to which a regional area implements regional water management options such that it can provide all its needs for water from within its borders. Context: evaluation criteria.

related action — Related actions are part of the *California Water Plan Update 2013* implementation plan and tell how objectives will be carried out. They describe specific actions in measurable, time-based statements of intent. They emphasize the results of actions at the end of a specific time. Some related actions must be undertaken by State government or communities over which DWR has no authority. In these cases, measure and time must be part of the entities' own strategic plans. Context: Update 2013 strategic plan.**releases for Delta outflow—CVP —** Releases from Central Valley Project (CVP) reservoirs to supplement natural flows in order to meet outflow requirements for protection of beneficial uses in the Sacramento-San Joaquin River Delta. Context: water portfolio.

releases for Delta outflow—SWP — Releases from State Water Project (SWP) reservoirs to supplement natural flows in order to meet outflow requirements for protection of beneficial uses in the Sacramento-San Joaquin River Delta. Context: water portfolio.

reliability planning — Water reliability management planning is done by comparing the costs of taking actions to maintain or increase reliability to the costs of accepting less reliability. On this basis, accepting the costs of adverse effects of less than 100-percent reliability could be a legitimate planning decision. Providing full water supply to meet 100 percent of projected future water demand would not be the planning goal; rather, the goal would be to find the justified level of reliability. Context: planning concept/consideration.

remaining natural runoff—flow to salt sinks — The instream or wild and scenic river natural runoff that flows to the ocean or another salt sink. Context: water portfolio.

required Delta outflow net water use — Freshwater outflow from the Sacramento-San Joaquin River Delta required by law to protect the beneficial uses within the Delta from the incursion of saline water. Context: water portfolio.

required instream flow — The amount of water required for instream use by agreement, water rights permit, or State/federal acts.

Reservoir System Simulation (ResSim) — ResSim can simulate a range of reservoir operating conditions and accurately simulate downstream flows at specific control point locations. Context: resource management strategies.

resilience — The capacity of a resource/natural system to adapt to and recover from changed conditions after a disturbance.

resource management strategy — A project, program, or policy that helps federal, State, or local agencies manage water and related resources. Resource management strategies in the California Water Plan are grouped by their intended outcomes: to reduce water demand, improve operational efficiency and transfers, increase water supply, improve water quality, practice resource stewardship, or improve flood management.

Although most of the resource management strategies have multiple potential benefits, any individual site-specific project or program within a resource management strategy may contribute only one benefit or a few benefits.

return flow to developed supply (other HR)—ag — Surface return flows from irrigated agriculture to stream channels that are available for use in another hydrologic region. Context: water portfolio.

return flow to developed supply (other HR)—urban — Surface return flows from urban areas to stream channels that are available for use in another hydrologic region. Context: water portfolio.

return flow to developed supply (other HR)—wetlands, wild and scenic, instream — Surface return flows from managed wetlands, wild and scenic rivers, and instream flows to stream channels that are available for use in another hydrologic region. Context: water portfolio.

return flows evaporation and evapotranspiration—ag — Evaporation and evapotranspiration by weeds and other vegetation in fringes of fields and in and near agricultural drains and sump areas. Context: water portfolio.

return flows to salt sink—ag — Agricultural return flows that go to saline water bodies, such as the Salton Sea or the ocean, or to saline groundwater basins. Context: water portfolio.

return flows to salt sink—urban — Urban return flows that go to saline water bodies, such as the Salton Sea or the ocean, or to saline groundwater basins. Context: water portfolio.

return flows to salt sink—wetlands — Managed wetlands return flows that go to saline water bodies, such as the Salton Sea or the ocean, or to saline groundwater basins. Context: water portfolio.

return-flow system — A system of pipelines or ditches to collect and convey surface or subsurface runoff from an irrigated field for reuse.

reuse groundwater — The amount of deep percolation from untreated raw applied and conveyance water offsetting groundwater extraction. Context: water portfolio.

reuse of return flows within region—ag — Reuse of agricultural irrigation system tailwater and return flows to local distribution systems and streams within a region; this does not include reuse of excess applied water that percolates to groundwater. Context: water portfolio.

reuse of return flows within region—urban — Represents reuse of urban tailwater and return flows to local distribution systems and streams within a region; this does not include reuse of excess applied water that percolates to groundwater. Context: water portfolio.

reuse of return flows within region—wetlands, wild and scenic, instream — Represents reuse of managed wetlands irrigation system tailwater and return flows, wild and scenic river flows, and required instream flows to local distribution systems and streams within a region; this does not include reuse of excess applied water that percolates to groundwater. Context: water portfolio.

reuse surface water — The amount of untreated raw applied water recaptured for use through surface drainage facilities. Context: water portfolio.

reused agricultural water — Water that is used by more than one grower and is, therefore, not available for reallocation should one grower become increasingly efficient (i.e., applied water reductions minus real water equal zero). Context: planning concept/consideration.

reused water — The application of previously used water to meet a beneficial use, whether treated or not prior to the subsequent use. (*Cf.* "recycled water.")

reverse osmosis — A method of purifying water by applying pressure to force a solution of saline water through a membrane, retaining the solute (higher concentrated saline water) on one side and allowing the pure solvent (water) to pass to the other side. This is the reverse of the normal osmosis process, which is the natural movement of solvent (water) from an area of low solute concentration, through a membrane, to an area of high solute concentration (saline water) when no pressure is applied.

riparian ecosystems — Ecosystems that occur on and near stream banks.

riparian right — A right to use surface water, derived from the fact that the land in question abuts the banks of streams or another water source (a lake or pond). These rights are senior to most appropriative rights. *See also* "appropriate right" and "pueblo right."

risk-based water deliveries — Balances increasing deliveries in a given year with the risk of not meeting full deliveries in a subsequent dry year. Context: resource management strategies.

robust decision-making (RDM) — RDM analysis is a new approach to decision support when conditions present deep uncertainty. RDM uses computational methods to identify scenarios likeliest to break assumptions embedded in a long-term resource management plan. Context: scenario factor.

root zone — The portion of the soil profile through which plant roots readily penetrate to obtain water and plant nutrients, expressed in inches or feet of depth.

runoff — The volume of surface flow from an area. Natural runoff is the portion of precipitation that runs off the land and makes up the natural flow in rivers. Incidental runoff is the portion of precipitation that would have been used by natural vegetation but now contributes to runoff. This is a result of roads, paved areas, building roofs, land drainage systems, fields developed for irrigation, and other changes in land use. Context: water portfolio.

S

safe yield — The maximum quantity of water that can be continuously withdrawn from a groundwater basin without adverse effect saline soil; a nonalkali soil containing soluble salts in such quantities that they interfere with the growth of most plants.

saline intrusion — The movement of salt water into a body of fresh water. It can occur in either surface water or groundwater bodies.

salinity — Generally, the concentration of mineral salts dissolved in water. Salinity may be expressed in terms of concentration or as electrical conductivity. When describing salinity influenced by seawater, salinity often refers to the concentration of chlorides in the water. Context: resource management strategies.

salts — Ayers and Westcot define salts as materials that "originate from dissolution or weathering of the rocks and soil, including dissolution of lime, gypsum and other slowly dissolved soil minerals." Context: resource management strategies.

saturated zone — The zone in which all interconnected openings are filled with water, usually underlying the unsaturated zone.

saved water — Saved water constitutes new water only if it is prevented from evaporating from soil or flowing to salt sinks such as saline surface or groundwater or ocean. *See* "new water."

scenarios — Sets of plausible future conditions based on different assumptions of factors, such as population size, density, and distribution; per capita income; commercial and industrial activity; climate change; and crop area and water use. In *California Water Plan Update 2013*, the three scenarios for 2050 are "Current Trends," "Slow and Strategic Growth," and "Expansive Growth."

sea level rise — An increase in the height of the average or peak sea level at coastal or tidal locations, usually with regard to projected impacts due to climate change.

seasonal vs. permanent crop mix — Shifts in crop type between seasonal and permanent. This factor depicts the diminished ability to reduce water use during times of increased water scarcity (due to shifting from seasonal to permanent crops). In other words, shortage losses increase when shifting from season to permanent. Context: scenario factor.

seawater intrusion barrier — A system designed to retard, cease or repel the advancement of seawater intrusion into potable groundwater supplies along coastal portions of California. The system may be a series of specifically placed injection wells or a combination of injection and pumping wells where water is injected or pumped to form a hydraulic barrier.

Secchi disk — A small white disk of specific size used to measure the depth clarity of a water body.

secondary porosity — Voids in a rock formed after the rock has been deposited; not formed with the genesis of the rock, but later, due to other processes. Fractures in granite and caverns in limestone are examples of secondary openings.

seepage — The gradual movement of water into, through, or from a porous medium; also, infiltration of water into soil from canals, ditches, laterals, watercourses, reservoirs, storage facilities, or other bodies of water or from a field.

semi-confined aquifer — A semi-confined aquifer or leaky confined aquifer is an aquifer that has aquitards either above or below that allow water to leak into or out of the aquifer depending on the direction of the hydraulic gradient. *See also* "artesian aquifer." (*Cf.* "confined aquifer" and "unconfined aquifer.")

service area — The geographic area served by a water agency.

soil moisture — The water in soils; usually expressed as a percentage of the dry weight of the soil. It may also be expressed on a wet weight or a volume basis.

soil texture — Soil texture refers to the percentage of sand, silt, and clay particles in a soil. Sand, silt, and clay particles are defined by their size. Soil texture has important effects on soil properties such as water-holding capacity, drainage class, consistence, and chemical properties.

solar evaporator — An enhanced evaporation system that uses timed sprinklers or other equipment that allows the discharge rate to be set and adjusted as necessary to avoid standing water within the surface of the solar evaporator.

solute transport (analysis) — The ability to analyze and predict the movement of solutes in groundwater systems in order to determine the impacts of groundwater contamination. Context: water quality.

specific retention — The ratio of the volume of water a rock or sediment will retain against the pull of gravity to the total volume of the rock or sediment.

specific yield — The ratio of the volume of water a rock or soil will yield by gravity drainage to the total volume of the rock or soil.

spring — A location where groundwater flows naturally to the land surface or a surface water body. (*Cf.* "artesian aquifer.")

sprinkler irrigation — A method of irrigation in which water is sprayed, or sprinkled, through the air to the ground surface.

stakeholder — Individuals or groups who can affect or be affected by an organization's activities; or individuals or groups with an interest or "stake" in what happens as a result of any decision or action. Stakeholders do not necessarily use the products or receive the services of a program.

State Water Project (SWP) deliveries — (1) The volume of water imported to a given study area from the State Water Project. (2) The sum of all deliveries to State Water Project contractors. Context: (1) scenario factor, (2) water portfolio.

statewide water management systems — These include physical facilities (more than 1,200 State, federal, and local reservoirs, as well as canals, treatment plants, and levees), which make up the backbone of water management in California; and statewide water management programs, which include water-quality standards, monitoring programs, economic incentives, water pricing policies, and statewide water-efficiency programs such as appliance standards, labeling, and education.

statutory permitting system — A water rights permitting system defined in the California Water Code and administered by the State Water Resources Control Board.

stochastic simulation — This is also known as Monte Carlo simulation or model sampling. An example of this type of analysis is the U.S. Army Corps of Engineers' software program, HEC-FDA (flood damage assessment software) that directly incorporates uncertainties into a flood damage analysis.

stormwater (runoff)— Water that is originated during a precipitation event and may collect and concentrate diffused pollutants and carry them to watercourses, causing degradation. Runoff in the urban environment, both storm-generated and dry-weather flows, has been shown to be a significant source of pollutants to the

surface waters of the nation. In California, the authority to regulate urban and stormwater runoff under the National Pollutant Discharge Elimination System has been delegated by the U.S. Environmental Protection Agency to the State Water Resources Control Board and the nine Regional Water Quality Control Boards. *See* Volume 3, Chapter 19, "Urban Runoff Management."

strategic plan — The long-term goals of an organization or program and an outline of how they will be achieved (e.g., adopting specific strategies, approaches, and methodologies).

stratigraphy — The science of rocks. It is concerned with the original succession and age relations of rock strata and their form, distribution, lithologic composition, fossil content, geophysical and geochemical properties—all characters and attributes of rocks as strata—and their interpretation in terms of environment, mode of origin,and geologic history.

stream ecosystems — Stream ecosystems are labeled according to their inhabitants; thus, area streams are referred to by these labels: conifer forest snowmelt streams, trout headwater streams, trout/sculpin streams, sucker/dace/redside streams, and whitefish cutthroat/sucker streams.

stream order — A systematic process for describing the degree of branching of a stream network within a watershed.

subirrigation — Application of irrigation water below the ground surface by raising the water table to within or near the root zone.

subsidence — *See* "land subsidence."

subsurface drip irrigation — Application of water below the soil surface through emitters, with discharge rates generally in the same range as drip irrigation. This method of water application is different from and not to be confused with subirrigation, where the root zone is irrigated by water table control.

subterranean stream — Subterranean streams "flowing through known and definite channels" are regulated by California's surface water rights system. The physical conditions that must be present in a subterranean stream flowing in a known and definite channel are: (1) a subsurface channel must be present; (2) the channel must have relatively impermeable bed and banks; (3) the course of the channel must be known or capable of being determined by reasonable inference; and (4) groundwater must be flowing in the channel.

surface irrigation — Irrigation in which the soil surface is used as the conduit, as in furrow and border irrigation, and as opposed to sprinkler, drip, and subirrigation.

surface storage — Surface storage uses reservoirs to collect water for later release and use. Context: resource management strategies.

surface storage facilities — The volume and yield of usable reservoir storage in a given area. Context: resource management strategies.

surface supply — Water supply obtained from streams, lakes, and reservoirs.

surface water — As defined under the California Surface Water Treatment Rule, California Code of Regulations Title 22, Section 64651.83, surface water means "all water open to the atmosphere and subject to surface runoff" and hence would include all lakes, rivers, streams, and other water bodies. Surface water thus includes all groundwater sources that are deemed to be under the influence of surface water (i.e., springs, shallow wells, wells close to rivers, etc.), which must comply with the same level of treatment as surface water.

surface water net change in storage — The difference between the water released from and water flowing into surface reservoirs. Context: water portfolio.

surface water storage—end of year — The amount of water stored in lakes and reservoirs at the end of the water year. Context: water portfolio.

surface water total available storage — Total developed surface storage available in a region. Context: water portfolio.

surge irrigation — A surface irrigation technique wherein flow is applied to furrows (or, less commonly, borders) intermittently during a single irrigation set.

surplus water — Water that is not being used directly or indirectly to benefit environmental, agricultural, or urban use sectors. Context: planning concept/consideration.

sustainability — (1) The intent in *California Water Plan Update 2013* when discussing sustainable development or sustainable use of resources is to portray the concepts of longevity and resilience. A system that is sustainable should meet today's needs without compromising this ability of future generations to meet their own needs. A sustainable system generally provides for the economy, ecosystem, and social equity. (2) A specific resource that avoids complete depletion over a specified time horizon. The continued feasibility of a specified economic activity over a specified time horizon, usually influenced by management and policy actions. Context: (2) economic activity.

sustainable development — *See* "sustainability."

system reoperation — Changing existing water system operation and management procedures or priorities to either meet competing beneficial uses or derive more total benefits from the water system by operating more efficiently. Context: resource management strategies.

T

tailwater — Surface runoff water from irrigated agriculture.

third-party impacts — The occurrence of incidental economic impacts on parties not directly related to impact-causing water management actions. For example, agricultural land retirement can affect local tax revenues or labor conditions. Context: evaluation criteria.

tile water (tile drainage) — The water drained from agricultural fields by the practice of removing excess water from the subsurface of soil with a network of below-ground pipes that allow subsurface water to move out from between soil particles and into the tile line. Water flowing through tile lines is often ultimately deposited into surface water. Water enters the tile line either via the gaps between tile sections, in the case of older tile designs, or through small perforations in modern plastic tile. Tile drainage brings soil moisture levels down for optimal crop growth and is used as a primary method of controlling soil salinity.

total capital cost — The total monetary cost of option required for "turnkey" implementation, including environmental and third-party impact mitigation, storage, conveyance, energy, capitalized operations and maintenance, administrative costs, planning costs, legal costs, and engineering costs. Context: planning concept/consideration.

total commercial activity — The amount of commercial activity (e.g., employment, productivity, and commercial land use) that occurs in a given study area. This factor is a driver of (and indicator for) commercial water use and includes institutional water use (government offices, schools, etc.) as well. *See also* "commercial activity mix." Context: scenario factor.

total desalination — Water coming from any source that is desalted by reverse osmosis or other processes (context: water portfolio). *See also* "desalination."

total groundwater natural recharge — Percolation to groundwater basins from precipitation falling on the land and from flows in rivers and streams. Context: water portfolio.

total industrial activity — The total amount of industrial activity (e.g., employment, productivity, industrial land use, etc.) that occurs in a given study area. This factor is a driver of (and indicator for) industrial water use. Context: scenario factor.

total irrigated crop area — The total area of irrigated crops (by type) planted in a planning area during a given year. This number includes multiple cropping. Context: scenario factor.

total maximum daily load (TMDL) — TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still safely meet water quality standards.

total population — The statewide total population projection regardless of geographical distribution. Context: scenario factor.

transient noncommunity water system — Such a system serves 25 or more people for at least 60 days per year. (*Cf.* "nontransient noncommunity water system.")

transpiration — An essential physiological process in which plant tissues give off water vapor to the atmosphere.

U

[urban] water reliability (average) — A measure of a system's ability to sustain the social, environmental, and economic systems that it serves during a year of average precipitation. Context: evaluation criteria.

[urban] water reliability (dry) — A measure of a system's ability to sustain the social, environmental, and economic systems that it serves during a dry year. Context: evaluation criteria.

[urban] water reliability (wet) — A measure of a system's ability to sustain the social, environmental and economic systems that it serves during a wet year. Context: evaluation criteria.

unaccounted-for water — Unaccounted-for water (sometimes referred to as water losses) is the seepage, deep percolation, and runoff of water due to deteriorated and aging infrastructure. Water utilities conduct audits to identify water main leaks, unmetered water use for parks and recreation consumption, water theft, and inaccurate meters. Context: resource management strategies.

unconfined aquifer — An aquifer that is not bounded on top by an aquitard. The upper surface of an unconfined aquifer is the water table. *See also* "artesian aquifer." (*Cf.* "confined aquifer" and "semi-confined aquifer.")

underground stream — A body of water flowing as a definite current in a distinct channel below the surface of the ground, usually in an area characterized by joints or fissures.

unit applied water — The quantity of water applied to a specific crop per unit area (sometimes expressed in inches of depth).

unsaturated zone — The zone below the land surface in which pore space contains both water and air.

urban commercial use — The water used by light industry and light or non-manufacturing business establishments, including retail services, office buildings, restaurants, dry cleaners, and other consumer-oriented services or businesses. This also includes employee uses and recreational facilities (temporary lodging) and may include institutional or governmental use as well. Context: water portfolio.

urban energy production — The water used for refineries and cooling in thermoelectric power generation. Context: water portfolio.

urban industrial use — The heavy-water-using manufacturing with cooling towers—for processing, manufacturing, and other industrial plant uses (canneries, mills, or other large complex users of supply) as defined by the North American Industry Classification System (NAICS). This water can be used as cooling water or for rinsing, washing, diluting, and other sanitation operations. Also included are employee uses and landscape irrigation. Context: water portfolio.

urban land use management — Planning for the housing and economic development needs of the growing population while providing for the efficient use of water and other resources.

urban large landscape — The water used to irrigate recreational and large landscape areas such as golf courses, parks, play fields, highway medians, and cemeteries. Context: water portfolio.

urban residential use—multi-family — Interior: The water used within a residential, multi-family housing unit (with two or more units), which houses two or more households (such as duplexes, apartments, or condominiums). Uses include personal hygiene, cooking, drinking, and laundry. Exterior: The water used outside a residential, multi-family housing unit for purposes such as landscape irrigation, swimming pools, car washing, sidewalk cleaning, and the watering of domestic animals. Context: water portfolio.

urban residential use—single family — Interior: The water used within a single-family, detached housing unit for such uses as personal hygiene, cooking, drinking, and laundry. Exterior: The water used outside a single-family, detached housing unit for purposes including landscape irrigation, swimming pools, car washing, sidewalk cleaning, and the watering of domestic animals. Context: water portfolio.

urban runoff management — A broad series of activities to manage both stormwater and dry-weather runoff.

urban wastewater produced — Flow from urban areas into urban wastewater treatment plants. Context: water portfolio.

Urban Water Management Planning Act — Sections 10610 through 10657 of the California Water Code. The act requires urban water suppliers to prepare urban water management plans that describe and evaluate sources of water supplies, efficient uses of water, demand management measures, implementation strategies and schedules, and other relevant information and programs within their water service areas. Urban water suppliers (Section 10617) are either publicly or privately owned and provide water for municipal purposes, either directly or indirectly, to more than 3,000 customers or supply more than 3,000 acre-feet of water annually.

urban water use — The use of potable and non-potable water for urban purposes, including residential, commercial, industrial, recreation, energy production, military, and institutional classes. These are types of uses rather than places of use. Context: water portfolio.

urban water use efficiency — Methods or technologies resulting in the same beneficial residential, commercial, industrial, and institutional uses with less water or increased beneficial uses from existing water quantities. Context: scenario factor and resource management strategies.

usable storage capacity — The quantity of groundwater of acceptable quality that can be economically withdrawn from storage.

use values — Use values are based on water taken up and utilized in the environment. Non-use values are not associated with actual use of, or even an option to use, an ecosystem or its service.

V

variable fluoridation — Fluoridation at levels up to optimal level depending on many factors, including time of year, water demand, and the use of sources that may not have fluoridation treatment facilities. Variable fluoridation is most often the result of a water system receiving fluoridated water from a wholesale provider, while also using local unfluoridated water sources. Context: water quality and resource management strategies.

vernal pools — Subsets of wetlands that occur in shallow foothill and valley depressions. Because of the presence of low-permeability soils (e.g., clay or hardpan), which limit water filtration, water remains in pools and swales until it evaporates, usually within a few days to a few months, mainly in late winter and spring.

vision statement — The California Water Plan's vision statement describes the desired future for California water resources and management. It serves as a foundation for water and flood planning during the planning horizon. Context: Update 2013 strategic plan.

volatile organic compound (VOC) — A human-made organic compound that readily vaporizes in the atmosphere. These compounds are often highly mobile in the groundwater system and are generally associated with industrial activities.

W

wastewater reclamation — "Water reclamation" or "wastewater reclamation" can have two meanings: (1) the process of treating wastewater for beneficial use, storing and distributing recycled water; and (2) the actual use of recycled water. This definition is the more common meaning, depending on the context: The treatment of water of impaired quality to produce a water of suitable quality for intended use. *See also* "water recycling" and "water reuse." Context: resource management strategies.

water bag transport/storage technology — Diverting water in areas that have unallocated fresh water supplies, storing the water in large inflatable bladders, and towing them to an alternate coastal region. Context: resource management strategies.

water balances — Analyses of the total developed/dedicated supplies, uses, and operational characteristics for a region; they show what water was applied to actual uses so that use equals supply. *See* "water portfolio."

water demand — The desired quantity of water that would be used if the water were available and if a number of other factors, such as price, did not change. Demand is not static.

water demand elasticity — A phrase describing that the desire to use water is based on a number of factors, such as the intended use for the water, the price of water, and the cost of alternative ways to meet the intended use.

water depletion — Net water use minus water that can be recovered later, such as deep percolation and return flow, to developed supply. Context: water portfolio.

water exchanges — Typically water delivered by one water user to another water user; the receiving water user will return the water at a specified time or when the conditions of the parties' agreement are met. *See also* "water transfers." Context: resource management strategies.

water from refineries — Water produced as a byproduct of the oil or gas refining process. Context: water portfolio.

water in the environment — Consumptive and nonconsumptive use of water, not including agricultural and urban uses. Defined by the Sustainability Roundtable as "a measure of the water remaining in the environment after withdrawals and consumption."

Water Planning Information Exchange (Water PIE) — In May 2008, DWR launched a working prototype of the Water PIE, an online information exchange system to share water management information between State, regional, and local agencies and government. *See* "Integrated Water Resources Information System (IWRIS)."

water portfolio — A picture of the water supply and use for a given year statewide or by region, subject to availability of data; it includes a flow diagram, a flow diagram table, water balances, and a summary table.

water quality — A description of the chemical, physical, and biological characteristics of water, usually in regard to its suitability for a particular purpose or use.

water recycling — (1) *See* the first definition of "wastewater reclamation" above, which currently is the most common usage; (2) the reuse or recirculation of water through the same series of processes, pipes, or vessels more than once by one user, often without treatment between uses, such as in cooling towers or cascading uses within an industry where the wastewater from one process is the source water for another process. *See* "wastewater reclamation" and "water reuse." Context: resource management strategies.

water reliability — Dry: A measure of a system's ability to sustain the social, environmental, and economic systems that it serves during a dry year. Wet: A measure of a system's ability to sustain the social, environmental, and economic systems which it serves during a wet year.

Water Resource Integrated Modeling System (WRIMS model engine or WRIMS) — Formally named CALSIM, WRIMS is a generalized water resources modeling system for evaluating operational alternatives of large, complex river basins. WRIMS integrates a simulation language for flexible operational criteria specification, a linear programming solver for efficient water allocation decisions, and graphics capabilities for ease of use. These combined capabilities provide a comprehensive and powerful modeling tool for water resource systems simulation. *See also* "CALSIM."

water reuse — The additional use of previously used water, with or without treatment. This term also often takes on the more encompassing meaning in the first definition of "wastewater reclamation" above. "Direct reuse" is the use of recycled water that has been transported from a wastewater treatment plant to a reuse site without passing through a natural body of either surface or groundwater. This is also called "pipe-to-pipe" reuse, where the recycled water is conveyed in a distribution system after treatment. "Indirect reuse" is the use of recycled water indirectly after it has passed through a natural body of water after discharge from a wastewater treatment plant. Groundwater recharge is an example. Another is the reuse of Sacramento's wastewater after discharge by downstream users. "Planned reuse" is the deliberate direct or indirect use of recycled water without relinquishing control over the water during its delivery. Direct reuse is always considered planned because it involves delivery in a distribution system leading from the wastewater treatment plant to the point of reuse. "Unplanned reuse" or "incidental reuse" is the unplanned use of wastewater after disposal. The reuse of Sacramento's effluent by downstream users is considered unplanned; there is no planned intent by Sacramento to have the State Water Project pump a portion of its effluent to Southern California. *See* "wastewater reclamation." Context: resource management strategies.

water rights — In water law, the right of a user to use water from a water source (e.g., a river, stream, pond, or source of groundwater).

water service area — A geographic area in which a water agency is the designated water service provider.

water supply exports — The amount of water that a region transfers to another to meet needs. Context: regional reports.

water supply imports — The amount of water brought in from other regions to meet needs. *See* "water transfer." Context: regional reports.

water table — *See* "groundwater table."

water transfer — A water transfer is defined in the California Water Code[6] as a temporary or long-term change in the point of diversion, place of use, or purpose of use due to a transfer or exchange of water or water rights. Many transfers, such as those among contractors of the State Water Project or Central Valley Project, do not fit this definition. A more general definition is that water transfers are a voluntary change in the way water is usually distributed among water users in response to water scarcity. Compare this with water exchanges, which are typically water delivered by one water user to another water user; the receiving water user will return the water at a specified time or when the conditions of the parties to the agreement are met. Context: resource management strategies.

water transfers—imported — Water that is transferred across hydrologic region boundaries from one agency to another. Transfer requires approval from the State Water Resources Control Board for a change in place of use. Context: water portfolio.

water transfers—regional — Water that is transferred within a hydrologic region from one agency to another. Transfer requires approval from the State Water Resources Control Board for a change in place of use. Context: water portfolio.

water treatment — Active water treatment consists of any method where energy is necessary to process the effluent. Passive water treatment includes the use of settling ponds, wetlands, and field rotation in pastures.

water year — A continuous 12-month period for which hydrologic records are compiled and summarized. Different agencies may use different calendar periods for their water years. For DWR, a water year is October 1 through September 30.

watershed — The land area from which water drains into a stream, river, or reservoir.

watershed management — The process of evaluating, planning, managing, restoring, and organizing land and other resource use within an area that has a single common drainage point. Context: resource management strategies.

watershed management areas (WMAs) — WMAs are geographically defined watershed areas where the Regional Water Quality Control Boards will implement the watershed approach. *See* "Watershed Management Initiative."

Watershed Management Initiative (WMI) — The WMI establishes a broad framework overlying numerous federal- and State-mandated priorities as part of the State Water Resources Control Board's 1995 strategic plan. As such, the WMI helps state and regional water boards achieve water resource protection, enhancement, and restoration while balancing economic and environmental impacts. *See also* "watershed management areas."

wet season — The period of time on an annual cycle in which the majority of rainfall occurs. In California, that period is from late October through March.

Wild and Scenic River systems — State- and federal designated river systems under the 1968 national Wild and Scenic Rivers Act and the 1972 California Wild and Scenic Rivers Act. Seventeen rivers in California, including many forks and tributaries — about 1,900 miles of river — are designated wild, scenic, or recreational. Context: water portfolio.

wild and scenic rivers net water use — Annual natural flows from the designated State and federal Wild and Scenic Rivers systems. Context: water portfolio.

[6] Temporary water transfers (Section 1728 of the California Water Code) have a duration of one year or less. Long-term water transfers (Section 1735 of the California Water Code) have a duration of more than one year.

willingness to accept — A comparable concept to willingness to pay is called willingness to accept or willingness to receive, which measures how much an individual who is a seller would accept or receive as payment if he or she could be induced to forgo a good or service. The amount of payment can then be equated to the economic value of the good or service. In short, the economic value to a seller is equal to his or her "willingness to accept." Context: ecosystem valuation methods.

willingness to pay — (1) The economic value of a good or service to a person who is a buyer is measured by the maximum amount of other things that he or she is willing to give up in order to acquire that good or service (*cf.* "willingness to accept"). (2) Quantifiable financial support for watershed management in which individuals have a willingness to pay for services provided by a well-managed watershed. Context: (1) ecosystem valuation methods, (2) resource management strategies.

working landscape — An economically and ecologically vital and sustainable landscape where agricultural and other natural resource-based producers generate multiple public benefits while providing for their own and their communities' economic and social well-being. Context: resource management strategies.